



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,718	12/08/2000	Donald C. Abbott	TI-29679	2496

23494 7590 10/15/2002

TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

CAO, PHAT X

ART UNIT PAPER NUMBER

2814

DATE MAILED: 10/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/733,718

Applicant(s)

ABBOTT ET AL.

Examiner

Phat X. Cao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-16 and 21-23 is/are rejected.
- 7) ☒ Claim(s) 7 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2814

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al (US. 6,232, 651).

Lee (Fig. 6) discloses a semiconductor device, comprising: a lead frame, comprising: a first layer 36 of noble metal (platinum) covering the lead frame; a second layer 37 of noble metal (palladium) covering all portions of the first layer 36, wherein the first layer 36 of the noble metal is thinner than the second layer of the noble metal 37 (column 3, lines 26-40).

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

Art Unit: 2814

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5, 9 and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al (US. 5,767,574).

Kim, in Figs. 1 and 5, discloses a lead frame for use in the assembly of integrated circuit chips, comprising: a base metal structure 51 of copper having an adherent layer 52 of nickel covering the base metal 51; an adherent film 53 of palladium on the nickel layer 52; and an adherent layer 54 of palladium on the palladium film 53, covering all portions of the lead frame including areas which are suitable for bonding wiring attachment and solder attachment; wherein the base metal 51 has a thickness of 0.1 to 3.0 mm (column 3, lines 19-21). the nickel layer 52 has a thickness of 0.1 to 2.0 um and the palladium film 53 has a thickness of 0.005 to 0.05 um (column 3, lines 23-25).

Note that the process limitation in claim 1 (selectively), does not carry weight in a claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

5. Claims 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Abys et al (US. 5,360,991).

Abys (Fig. 3) discloses a semiconductor device, comprising: a lead frame, comprising: a first layer 23 of palladium covering the lead frame; a second layer 25 of palladium covering all portions the first layer 23, wherein the first layer 23 is thinner than the second layer 25 (column 3, lines 50-53 and column 4, lines 22-23).

Art Unit: 2814

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 6, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US. 5,767,574).

With respect to claim 4, Kim, in column 1, lines 60-67 through column 2, lines 1-3 and related figure 3, further teaches the obviousness of forming the nickel layer being a stack consisting of a nickel layer 32 in the thickness range of 5 u-inches, plated onto the base metal 31, followed by a palladium/nickel layer 33 in the thickness range of 3 u-inches, followed by a nickel layer 34. Such structures would have been obvious because according to Kim, it is known for preventing the copper atoms from diffusing through the nickel layer (column 1, lines 60-62).

With respect to claim 6, Kim further teaches that the palladium layer 54 has a thickness of 0.1 um (column 3, lines 45-46) which is approximately equal to 90 nm as claimed.

With respect to claim 10, it would have been obvious forming the solder attachment comprising materials selected as claimed because these materials are well known in the art for using as the solder attachment (see column 1, lines 33-36).

Art Unit: 2814

With respect claim 11, process limitations (reflow temperature compatible with wire bonding temperatures and molding temperatures), do not carry weight in a claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

8. Claims 8 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US. 5,767,574) in view of Tsuji et al (US. 5,521,432).

With respect to claim 8, the process limitation (providing visual distinction) does not carry weight in a claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

With respect to claims 12-16, Tsuji teaches the obviousness of forming a lead frame comprising a chip mount pad for an integrated circuit chip and a plurality of lead segments, each segment having a first end near the mount pad and a second end remote from the mount pad; forming bonding wires 5 interconnecting the chip and the first ends of the lead segments by wire bonding; and encapsulation resin material 6 surrounding the chip, bonding wires and the first ends of the lead segments, while leaving the second ends of the lead segments exposed. Accordingly, it would have been obvious to include in the semiconductor lead frame of Tsuji with the structures as set forth above because such structures are well known for forming an IC package.

Allowable Subject Matter

9. Claims 7 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2814

Response to Arguments

10. With respect to claims 1 and 12, Applicant argues that Pd-X alloy layer is not a layer of Pd as claimed.

Applicant's arguments are not persuasive because it has long been held that the use of the term "comprising" leaves a claim open for inclusion of materials or steps other than those recited in the claims. *Ex parte Davis*, 80 USPQ 448 (PTO Bd. App. 1948). Use of the term "comprising" does not exclude the presence of other elements. *In re Hunter*, 288 F. 2d 930, 129 USPQ 25 (CCPA 1961). In this case, because of using of the term "comprising", the layer of Pd as claimed does not exclude the presence of other elements. Therefore, Pd-X alloy layer is a layer of Pd as claimed.

Applicant further argues that Kim does not suggest of "selective" deposition of any layer. However, "selective" is a process limitation which does not carry weight in a claim drawn to structure. *In re Thorpe*, 227 USPQ 964 (fed. Cir. 1985).

With respect to claim 4, Applicant argues that Kim does not suggest the thickness of a Ni layer as claimed. It is noted that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this case, the thickness of the Ni layer 34 is not critical.

Art Unit: 2814

It can be optimized during routine experimentation for preventing the copper atoms from diffusing through the nickel layer (column 1, lines 60-62).

With respect to claims 8 and 11, Applicant argues that “reflow temperature” (claim 11) and “visual distinction” (claim 8) are not process limitations. However, Applicant fails to point out which structures recited in claims 8 and 11 are not suggested by the applied references.

Conclusion

11. Applicant's amendment of new claims 21-24 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2814

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (703) 308-4917. The Examiner can normally be reached on Monday through Thursday. If attempts to reach the Examiner by telephone are unsuccessfully, the Examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. Group 2800 fax number is (703) 308-7722 or (703) 308-7724.

PC
October 7, 2002


PHAT X. CAO
PRIMARY EXAMINER